CALIFORNIA AIR RESOURCES BOARD

NOTICE OF PUBLIC MEETING TO CONSIDER FISCAL YEAR 1999-2000 GRANT AWARDS FROM THE RICE STRAW DEMONSTRATION PROJECT FUND

The Air Resources Board (the "Board" or "ARB") will conduct a public meeting at the time and place noted below to consider fiscal year 1999-00 grant awards to applicants from the Rice Straw Demonstration Project Fund.

DATE: May 25, 2000

TIME: 9:30 a.m.

PLACE: Air Resources Board
Hearing Room, Lower Level
2020 L Street
Sacramento, CA 95814

This item will be considered at a meeting of the Board, which will commence at 9:30 a.m., May 25, 2000 and may continue at 8:30 a.m., May 26, 2000. This item may not be considered until May 26, 2000. Please consult the agenda for the meeting, which will be available at least 10 days before May 25, 2000, to determine the day on which this item will be considered.

This facility is accessible to persons with disabilities. If accommodation is needed, please contact ARB's Clerk of the Board at (916) 322-5594, or Telephone Device for the Deaf (TDD) at (916) 324-9531, or (800) 700-8326 for TDD calls from outside the Sacramento area at least 14 days before the hearing.

The Rice Straw Demonstration Project Fund (the Rice Fund) was created to help establish a commercial market for Sacramento Valley rice straw in order to develop alternatives to burning. The Fund provides cost-sharing grants for projects which would use significant quantities of rice straw, a byproduct of rice grain production.

Seven grant requests were received for this round of funding, which consists of $1.2 million of the allotted fiscal year 1999-2000 funds. Grant requests were evaluated for technical and business merit, program goals satisfaction, and policy compatibility by the ARB staff and expert reviewers using the funding criteria adopted by the Board at its January 29, 1998, public meeting. These criteria are set forth in the February 2, 2000, Air Resources Board's Staff Report entitled "Rice Straw Demonstrations Project Fund Invitation for Grant Requests." Over 300 individuals were invited to an April 25, 2000, public meeting in Sacramento to see six grant applicants present their proposals. The meeting notice was placed on ARB's website at www.arb.ca.gov and mailed to interested parties.

At the May 25, 2000, public meeting, staff will recommend the projects which should be funded based on the results of the review process. The Board will discuss the projects which the staff is recommending for funding and consider making the grant awards.

The public may present comments relating to this matter orally or in writing at the hearing, and in writing or by e-mail before the hearing. To be considered by the ARB, written submissions must be addressed to and received by the Clerk of the Board, Air Resources Board, P.O. Box 2815, Sacramento, California 95812, or 2020 L Street, 4th Floor, Sacramento, California 95814, no later than 12:00 noon Pacific Time May 24, 2000, or received by the Clerk of the Board at the hearing. To be considered by the ARB, e-mail submissions must be addressed to ricedemo@listserv.arb.ca.gov and received at the ARB no later than 12:00 noon Pacific Time, May 24, 2000.

The ARB requests, but does not require 30 copies of any written submission. Also, the ARB requests that written and e-mail statements be filed at least 10 days prior to the hearing so that ARB staff and Board Members have time to fully consider each comment.

Copies of the staff report may be obtained from the Board's Public Information Office, 2020 L Street, Sacramento, CA 95814, (916) 322-2990, at least 10 days prior to the scheduled meeting.

Further inquiries regarding this matter should be directed to Bob Fletcher, Chief, Planning and Technical Support Division, Air Resources Board, P.O. Box 2815, Sacramento, California 95812, (916) 322-5350.

CALIFORNIA AIR RESOURCES BOARD

Michael P. Kenny
Executive Officer

Date: May 8, 2000

THE RICE STRAW DEMONSTRATION PROJECT FUND

Proposed Grant Awards

For Fiscal Year 1999-2000

Release Date: May 15, 2000

California Environmental Protection Agency

Air Resources Board

Planning and Technical Support Division

California Environmental Protection Agency
AIR RESOURCES BOARD
Planning and Technical Support Division

Public Meeting to Consider the Fiscal Year 1999-2000 Grant Awards for the Rice Straw Demonstration Project Fund

Date of Release: May 15, 2000

Scheduled for Consideration: May 25, 2000

Location:

Air Resources Board
Board Hearing Room
2020 L Street
P.O. Box 2815
Sacramento, CA 95812

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SUMMARY

Senate Bill 318 (1997, Thompson) created the Rice Straw Demonstration Project Fund (the Rice Fund) and directed the California Air Resources Board to administer it. The goal of the Rice Fund is to help create a market for Sacramento Valley rice straw by providing cost-sharing grants for projects which show the greatest potential for becoming commercially self-sustaining users of rice straw.

Seven grant requests were received for fiscal year 1999-2000 funding. Grant requests were evaluated by expert reviewers using the funding criteria (see page 3) adopted by the Board at its January 29, 1998, public meeting. Six of the grant applicants presented their proposals at an April 25, 2000, public meeting.

The review panel consisted of three business experts, four technology experts, and one rice straw expert. Based on the results of the review process, staff recommends that the Board award grants to the following five projects:

"Evaluation and Delivery of Rice Straw Needed for Gridley Ethanol Plant's Startup Year of Operation" by Rice Straw Cooperative for a grant award of $380,000;

"Development of a Commercial Scale Composting Plant in Colusa County" by Broken Box Ranch for a grant award of $297,589;

"Rice Straw Export Project" by Kuhn Hay, a California Corporation for a grant award of $402,311;

"Rice Straw Silage Production for Cattle Feed" by Smith Ranches for a grant award of $50,100; and,

"*Production of Ethanol From Rice Straw*" by Arkenol Holdings, L.L.C., for a grant award of $100,000.

We are not recommending funding for two of the grant proposals received. The two proposals are:

"Fibex-treated Animal Feeds and Ethanol From Sacramento Valley Rice Straw: Production and Commercial Assessment," submitted by MBI International to evaluate rice straw for dairy cattle feed and for ethanol production; and,

"Biomass to Ethanol Facilitation Analysis," submitted by Sierra Economic Development District to survey availability of biomass for ethanol production.

Although reviewers recognized the merits of the MBI International proposal, they did not rate it as high as the other projects they reviewed. Also, ARB provided an $820,000 grant to MBI under a previous 1997-1998 round of rice fund grants. We believe that this preliminary work needs further development prior to granting of additional funds. Reviewers did not think the Sierra Economic Development District proposal met the objectives of the grant criteria. It did not propose to use any rice straw and commercialization objectives were unclear. The executive summaries of these two projects are presented in Appendix A.

A total amount of $1.23 million is being recommended for this fiscal year's grants. Project descriptions, evaluation summaries, and project executive summaries are presented for the five proposals being recommended.

FUNDING CRITERIA USED TO EVALUATE RICE FUND GRANT REQUESTS

Grant requests were evaluated using the criteria listed below. The criteria used for making the recommendations were adopted by the Board at its January 29, 1998, public meeting. These criteria are described in the February 2, 2000, ARB report: "The Rice Straw Demonstration Project Fund -- Program Description and Invitation for Grant Requests, Fiscal Year 1999-2000," which is included as Appendix B of this report.

Technical Plan Review:

- Viable technology for utilization of rice straw
- Reasonable and complete project
- Stage of technology development
- Technical competency of project team

Business Plan Review:

- Business merit and commercialization plan
- Straw supply plan
- Financial support and credit integrity
- Business competency of project team

Program Goals Satisfaction:

- Potential quantity of rice straw to be used annually
- Length of time to self-sustaining operation
- Project location and replication potential
- Local community support

Policy Assessment:

- Policy assessment
- Environmental effects

RECOMMENDED GRANT AWARDS

Following are discussions of the five projects that the staff recommends that the Board fund. Each discussion includes: the applicant's name, the recommended grant amount, the project timeline, the five-year rice usage outlook, the staff's description of the project, and a summary of the review team's assessment of the project. Following these elements of each project is an executive summary of the project that was written by the project proponent.

Title: ***"Evaluation and Delivery of Rice Straw Needed for Gridley Ethanol Plant's Startup Year of Operation"***

Applicant: Rice Straw Cooperative **Grant Amount: $380,000**

Straw used after Five years: 75,000 to 300,000 tons per year **Project time: Two years**

Proposal Summary

This project will achieve two primary outcomes. First, it will evaluate the degradation of stored rice straw and its effectiveness for making ethanol. The findings of the evaluation will be used to support financing of the BC International (BCI) Gridley Ethanol Project. The second outcome will be to establish the Rice Straw Cooperative (RSC) as a supplier of rice straw for the BCI Gridley Ethanol Project. The grant will help the RSC to bale, store, and deliver 18,000 bone-dry tons (BDTs) of rice straw for the start-up of the BCI Gridley Ethanol Plant, scheduled for May 2002. The RSC has signed an agreement with BCI to deliver a minimum of 75,000 BDTs of rice straw to the proposed Gridley Ethanol Project by the September 2002 project start-up date. The project will take two years to complete.

The RSC project team consists of the RSC -- an eight member rice farmer cooperative that bales, stores, and markets rice straw, BCI Corporation – a Gridley Ethanol Project proponent, and TSS Consultants – a consulting firm that specializes in conducting feasibility studies for locating new biomass facilities.

Evaluation Summary

The BCI Gridley plant will produce 23 million gallons of ethanol per year when in full operation. This will help to meet a 150 million to 1 billion gallon per year ethanol market in California when the phase-out of MTBE occurs in January 2003. Reviewers thought the project proposal offered a sound approach for providing a dependable supply of rice straw for the start-up of the BCI Gridley Ethanol Plant. Although the original RSC proposal requested $788,430 to deliver 37,000 BDTs of rice straw, reviewers thought the same objectives could be obtained with about half the funding. A scaled down proposal will allow for the evaluation of stored rice straw as well as the collection and delivery of 18,000 BDTs of rice straw to the Gridley plant. If additional costs for financial closure are incurred, reviewers thought that they should be born by the project proponents.

The RSC and BCI have committed to contribute $380,000 to the project. We recommend that the RSC be awarded a matching grant of $380,000 for a project of two years' duration.

"Rice Straw Silage Production for Cattle Feed"

EXECUTIVE SUMMARY
Provided by Smith Ranches

This project takes two years of field research on rice straw silage and will implement it in a commercial cattle feeding operation. The process of producing rice straw silage improves the palatability and nutritional quality over traditional dry baled straw for livestock usage. Increased intakes of rice straw silage averaged thirty-six pounds per head per day on a free choice ration. The digestible protein content can range as high as nine percent on a dry matter basis.

Due to the previous two years of research funded by the California Rice Research Board, this business will immediately commercialize the rice straw silage feeding process. Under this one year project, Smith Ranches will produce 1900 tons of rice straw silage this fall. It will be fed to 500 mature beef cows from November 2000 to March 2001. Commercial production information will be collected and ranch demonstration day will be conducted in the spring in conjunction with the University of California Extension Service to openly expose other beef and dairy operators to this new technology implemented at Smith Ranches. Based on the adoption of this technology by other cattle operations based on the Smith Ranches commercial model, according to University of California projections commercial use of rice straw could be as high as in the Northern Sacramento Valley. The rice straw silage will be produced in the District ten area northeast of Marysville and fed at the Smith Ranches feeding facility in Browns Valley. This project will create one new job in the local economy. The total cost of the commercialization of rice straw silage project to Smith Ranches is $497,300. The California Air Resources Board will contribute $50,100 to implement the start up of this innovative and well researched process.

growers, this means, a significant increase in the cost of doing business. Instead of $1.50 to 3.00 per acre for burning of rice straw, the costs will likely average $35 per acre. This economic impact can affect the future of the rice industry in California.

As a result, some rice growers in the Butte County and surrounding areas began investing time and money in alternative ways of disposing or rice straw. Because of the proposed Gridley Ethanol Project in their area, the Rice Straw Cooperative was formed to pool their resources for disposing of rice straw. An agreement was signed between the Rice Straw Cooperative and the BCI Gridley Ethanol Project, LLC committing to long-term delivery of rice straw to the project. These Butte County rice growers recognized that to do nothing could affect the future viability of their businesses. This proposal is for the California Air Resources Board to cost share with the growers and the Gridley Ethanol Project developers, the initial collection costs of a portion of the first years operational start-up needs for rice straw.

Title: ***"Development of a Commercial Scale Composting Plant in Colusa County"***

Applicant: Broken Box Ranch **Grant Amount: $297,589**

Straw used after Five years 50,000 tons per year **Project time: Two Years**

Proposal Summary

The Broken Box Ranch project proposes to develop a commercial-scale in-vessel composting plant in Colusa County. Rice straw and livestock waste will be mixed in a 60:40 ratio and placed in a vessel composting system for about 100 days to aerobically decompose the organic matter. The product will utilize state of the art composting technology and will complement the regional dairy industry by utilizing nitrogen rich livestock waste in a 30:1 carbon to nitrogen ratio for optimal compost production. The project will be located outside of Williams, California, and the organic compost will be sold in bulk to the increasing number of organic rice growers within a 25-50 mile radius who are looking for alternative soil amendments to expensive chicken manure. The product will initially sell for about $25/ton which is about half the price of chicken manure. The project proposes to use 15,000 tons of rice straw in the first year and 50,000 tons within four years. The Broken Box Ranch demonstration project will take two years to complete, and, if successful, could result in the development of sister plants in other locations capable of utilizing a collective total of about 100,000 tons per year of rice straw.

The Broken Box Ranch project team consists of Mr. Jerry Maltby, a rice and cattle farmer with over 30 years of experience, and Cynthia Daley, Ph.D., College of Agriculture, California State University, Chico.

Evaluation Summary

The potential for a rice straw compost market appears substantial. The technology involved is simple and straightforward, and the economics seem especially reasonable. The project converts two environmental wastes -- rice straw waste and livestock waste -- into one environmentally friendly product. Mr. Maltby's strong business experience coupled with Dr. Daley's academic and technical expertise lend confidence to the success of the project. The project will utilize student interns and will be used as a student teaching tool. The project has strong community support, including the University of California Cooperative Extension, the Colusa County Economic Development Corporation, and numerous others.

Broken Box Ranch will invest $297,589 of its own resources in cash and in-kind contributions. We recommend awarding the full amount requested ($297,589) to the Broken Box Ranch project. The project's duration will be two years.

"Development of a Commercial Scale Composting Plant in Colusa County"

EXECUTIVE SUMMARY
Provided by Broken Box Ranch

Project Description: The project proposes to develop a commercial-scale in-vessel composting plant in Colusa County, in an effort to resolve two of agriculture's most contentious waste management issues, rice straw burning and livestock manure runoff. Rice straw and livestock waste will be mixed in a 60:40 ratio and placed in an in-vessel composting system to aerobically decompose the organic matter. Preliminary research indicates that this system breaks down these materials into a very homogeneous soil amendment that is suitable for the organic growers market. Within four years of production, the plant will be using 50,000 tons of rice straw in Colusa County and will be poised to begin sister plants in other locations to effectively double the amount of rice straw utilization with every new site. Compost is a sensible solution for the problem of rice straw mitigation. The process decomposes the straw, kills the weed seeds and pathogenic organisms, and returns the nutrients to the soil.

Time length of project and date of commercialization: Funding is requested for 24 months. The proposed commercialized business will be operational within 3 months and fully self-sustaining within 3 years.

Usage of rice straw in tons per year at commercialization: Initially, the plant will use 15,000 tons during the startup phase and will be utilizing 50,000 tons within 4 years of production start.

Project location and number of jobs created at commercialization: The entire project will be constructed outside of Williams, CA. Six positions will be generated.

Total project cost and amount requested from the Rice Fund: The entire project cost is $1,195,989. The project requests $297,589 from the Rice Fund.

Any appropriate additional information desired: This project is a stand alone project submitted by members of production agriculture. It is a grass roots effort, that is not technical but highly effective in converting rice straw into a highly marketable product without any environmental side-effects or waste products. This process works and will begin removing rice straw this calendar year. Moreover, the process is completely replicable in other locations.

Title: ***"Rice Straw Export Project"***

Applicant: Kuhn Hay, A California Corporation **Grant Amount: $402,311**

Straw used after Five years: 100,000 tons per year **Project time: Two years**

Proposal Summary

The Japanese rice straw import market is estimated to be about 500,000 tons/year. This offers an extremely favorable opportunity for the export of California Rice Straw. Kuhn Hay, together with its partner Kanematsu Corporation, proposes to work with the National Hay Association, U.S. Department of Agriculture (USDA), and the Japanese Ministry of Agriculture, Forestry, and Fisheries (MAFF) to open up a market in Japan for California rice straw. The key barrier to entering the Japanese market is Japan's concern about pests and pathogens that might be imported along with the rice straw. Development of a rice straw treatment protocol would provide assurance to the Japanese that imported California rice straw is free of any pests or pathogens.

Kuhn Hay will work together with Anderson Hay and Grain (a previous rice grant recipient) and others at the National Hay Association, to help evaluate and develop a straw treatment protocol acceptable to the USDA and the Japanese MAFF. Additionally it will pursue development of a Japanese rice straw market, and develop collection, treatment, and distribution infrastructure for rice straw export to Japan. After the first two years of the project, Kuhn Hay proposes to export 25,000 tons of rice straw. In year five of its operation, Kuhn Hay plans to export 100,000 tons of rice straw.

Evaluation Summary

Kuhn Hay has extensive experience with straw collection and processing operations. It also has extensive experience with opening up export markets to Japan. Kuhn Hay has committed to support efforts already underway with the USDA and MAFF to develop a protocol for treating rice straw for export to Japan. The grant award would speed the development of a U.S./Japan export market.

Because ARB is already funding the Anderson Hay project – which includes an export component – reviewers thought the Kuhn Hay funding amount could be reduced without compromising the project's overall objectives to open the market. Once the market is opened, Kuhn Hay and others should have the resources available to enter into it. Kuhn Hay will contribute $2,410,778 of its money to the project, while Kanematsu Corporation will contribute $200,000. We recommend awarding a grant in the amount of $402,311 (reduced from the $588,170 requested) to Kuhn Hay for this project. The project's duration will be two years.

"Rice Straw Export Project"

EXECUTIVE SUMMARY
Provided by Kuhn Hay, A California Corporation

In response to the 1999-2000 Rice Straw Demonstration Project Fund Invitation for Grant Requests, Jim Kuhn of Kuhn Hay is submitting an application titled Rice Straw Export Project. Kuhn Hay is located in El Centro, California, and has been farming, trucking, compressing, and marketing baled hay and straw products for export since 1979. The primary goal of the project is to successfully expedite the opening of the Japan market to California rice straw. Currently the Japan market is open to importing rice straw from other countries, but has yet to accept the same product from the United States. The secondary goal is to establish the necessary steps for successfully harvesting and compressing large quantities of Sacramento Valley rice straw, resulting in a model that other companies can follow after the project reaches fruition.

The project's five-year plan is to be implemented in three phases. Years one and two will focus on opening the market to Japan, creating a harvest model for 25,000 tons, and completing compressing trials. Years two and three will focus on the construction of a new compressing complex to be located in Sacramento Valley, and the successful harvest of 25,000 tons from the fall 2002 harvest. Years three and four will increase the harvesting, marketing, and capacity of the facility to handle 50,000 tons in year four and 100,000 tons in year five. The applicant is confident that once the market is open, the California rice straw will successfully compete with existing foreign straw sources, resulting in a dramatic projected increase in tons to be sold. This will encourage other companies to pursue similar type projects to fulfill, at minimum, a 300,000-ton market.

Improving access to the Japanese rice straw market will necessitate establishing an acceptable protocol between the United States Department of Agriculture, the California Department of Agriculture, and a division of the Japan Ministry of Agriculture, Forestry, and Fisheries, Japan's Plant, Pests, and Quarantine Department (PPQ). Testing and fumigation methods to ensure no unwanted pests, diseases, or foreign matter will be presented for PPQ's approval. Moisture from weather and soil conditions present another challenge in determining how to efficiently harvest up to 300,000 tons of acceptable export quality rice straw in a four to six week window. From this research, the applicant is committing to construct a model facility, patterned after their El Centro facility, which will ultimately press 100,000 tons of California rice straw. One large benefit of this pilot project is that others will likely construct similar facilities to utilize more of the California rice straw once the market is open.

By summer 2002, Kuhn Hay intends to build a $2,637,000.300 compressing and straw storage facility in the Sacramento Valley for handling 25,000 tons of straw. The estimated cost to establish the market and begin to construct the facility is $6,124,149.00 of which the applicant is requesting $402,311 in matching funds from the Rice Straw Demonstration Project Fund. By 2004, the facility will be increased to handle 100,000 tons, with additional storage and equipment costing in excess of $4,410,000.00. The projected jobs that will be created will initially include 49 seasonal and 18 full time positions, increasing to 190 seasonal and 63 full time positions by 2004.

With the compressing technology and marketing channels established, this proposed project provides proven solutions, applicable to other operations, to substantially reduce the burning of California rice straw.

Title: *"Rice Straw Silage Production for Cattle Feed"*

Applicant: Smith Ranches **Grant Amount: $50,100**

Straw used after Five years: 20,000 tons per year Project time: One year

Proposal Summary

The proposed project will involve collecting 1,900 tons of rice straw and converting it into silage (animal feed). The silage will be fed to 500 head of brood cows between November 2000 to March 2001. The desirability of the silage to the cows will be evaluated, and recommendations for further commercialization of the product will be provided.

Smith Ranches is a cattle farm operation located in Yuba County. The project team includes cattle farmer Mr. Henry Smith, silage expert Mr. Jud Zentmeyer, and University of California Farm Advisor Mr. Glenn Nader.

Evaluation Summary

The Smith Ranches project is a research project aimed at evaluating the logistics and effectiveness of producing rice straw silage for cattle feed. There are about 32,000 beef cows present in the Yuba/Sutter/Butte Counties area during the winter period. This represents a substantial market for rice straw silage if this project succeeds. The technology is simple and the economics could be favorable for using upwards of 20,000 tons/year of rice straw.

The experience of the project team, together with the resources the project has to offer, make this a reasonably leveraged proposal. The project could likely lead to the commercialization of rice straw silage for cattle feed.

Smith Ranches will provide $447,200 of matching funds and resources for the project. Staff recommends a full grant award of $50,100 to Smith Ranches for this project's one year duration.

"Rice Straw Silage Production for Cattle Feed"

EXECUTIVE SUMMARY
Provided by Smith Ranches

This project takes two years of field research on rice straw silage and will implement it in a commercial cattle feeding operation. The process of producing rice straw silage improves the palatability and nutritional quality over traditional dry baled straw for livestock usage. Increased intakes of rice straw silage averaged thirty-six pounds per head per day on a free choice ration. The digestible protein content can range as high as nine percent on a dry matter basis.

Due to the previous two years of research funded by the California Rice Research Board, this business will immediately commercialize the rice straw silage feeding process. Under this one year project, Smith Ranches will produce 1900 tons of rice straw silage this fall. It will be fed to 500 mature beef cows from November 2000 to March 2001. Commercial production information will be collected and ranch demonstration day will be conducted in the spring in conjunction with the University of California Extension Service to openly expose other beef and dairy operators to this new technology implemented at Smith Ranches. Based on the adoption of this technology by other cattle operations based on the Smith Ranches commercial model, according to University of California projections commercial use of rice straw could be as high as in the Northern Sacramento Valley. The rice straw silage will be produced in the District ten area northeast of Marysville and fed at the Smith Ranches feeding facility in Browns Valley. This project will create one new job in the local economy. The total cost of the commercialization of rice straw silage project to Smith Ranches is $497,300. The California Air Resources Board will contribute $50,100 to implement the start up of this innovative and well researched process.

Title: ***"Production of Ethanol From Sacramento Valley Rice Straw"***

Applicant: Arkenol Holdings, L.L.C. **Grant Amount: $100,000**

Straw used after Five years: 264,000 tons per year **Project time: One year**

Proposal Summary

The proposed project will involve defining critical unit operations necessary to produce ethanol from rice straw on a commercial scale. The project will include evaluation of processes such as cellulose to sugar reaction kinetics, filtration operations, acid/sugar chromatographic separation, and feedstock grinding equipment.

Approximately 3-5 tons of rice straw will be used during this 12-month program. A commercial ethanol plant located in the Sacramento Valley could use upwards of 130,000 tons per year of rice straw.

Arkenol Holdings L.L.C., is an engineering, research, and development company formed in 1992 to commercialize a patented concentrated acid hydrolysis process for the production of bio-based fuels and chemicals from lignocellulosic feedstocks. The company is aiming to develop a rice straw to ethanol plant located in the Sacramento Valley.

Evaluation Summary

As a starting point, this proposal will use process data gathered from work previously funded through ARB's rice grant program. It will study the ethanol production process over a time span sufficiently long to demonstrate the rice straw to ethanol process. It will define the critical unit operations related to the acid hydrolysis filtration process over a wide range of operating conditions. It will attempt to mimic actual operating conditions expected at a commercial scale ethanol plant. The applicant demonstrates an excellent knowledge of process engineering needs and potential technical barriers, and provides considerable evidence of technological viability. This technology shows excellent potential for large-scale use of rice straw.

Arkenol originally requested $629,000 for a more scaled up research project. Although the reviewers thought the proposal had substantial merit, the reviewers felt the project was still too far from commercialization. Also, ARB has previously funded a similar Arkenol project for $519,000. For these reasons, reviewers thought a scaled down project was appropriate at this stage in the project's development.

Arkenol will provide matching funds of $100,000 for the project. Staff recommends a reduced grant award of $100,000 to Arkenol for this project's one year duration.

"Production of Ethanol From Sacramento Valley Rice Straw"

EXECUTIVE SUMMARY
Provided by Arkenol Holdings, L.L.C.

This proposal presents an innovative process for the large scale use of Sacramento Valley rice straw to produce ethanol, a renewable transportation fuel. Ethanol is used as neat fuel or oxygenate in reformulated gasoline. The U.S. consumption of ethanol is well over 1 billion gallons per year and expected to grow with the phasedown of MTBE use. It is largely produced in the United States from corn dextrose as raw material.

The Applicant, Arkenol Holdings, L.L.C. ("Arkenol"), a California based private company, proposes to demonstrate the production of ethanol from rice straw grown in the Sacramento Valley. This proposal will maximize use of available preliminary engineering design data, existing equipment, qualified and knowledgeable staff, and Arkenol's proven patented technologies for the lignocellulosic degradation of various materials, such as rice straw, into lignin, cellulose and hemicellulose.

In Arkenol's process, the cellulose and hemicellulose are converted into chemicals such as ethanol and citric acid in a process designed to optimize conversion of all process streams to marketable by-products. The silica may be extracted from the lignin fraction and converted to marketable by-products. The lignin is neutralized and sold as boiler fuel or soil amendment. The gypsum is sold as soil conditioner and the cell-bodies from the fermentation process marketed as animal feed.

This proposal consists of a program which will rigorously define the critical unit operations related to the filtration process over a wide range of operating conditions attempting to mimic actual operating conditions expected at commercial scale. The selection of these conditions is intended to remove as many unknowns as possible so as to reduce perceived Engineering Procurement & Construction (EPC) risk to levels more consistent with project economics. Using rice straw from the Sacramento Valley as a feedstock, this program will use process data from previous work as a starting point from which to study the process over time span sufficiently long to also demonstrate the use of recycle in the process. Approximately 3-5 tons of rice straw will be used during this 12 month program and about 132,000 tons per year for the commercial plant to be located in the Sacramento Valley.

The program will focus on the filtration unit operations associated with the 1st and 2nd stage reactors of the Arkenol technology to better define parameters crucial to scale-up and reduced production costs for ethanol. In addition, the program will also investigate alternate equipment for the grinding of the feedstock.

The construction of the full scale plant will employ approximately 150 workers during construction, and about 60 workers will be required for on-site plant operations and maintenance. Off-site jobs related to the handling of the rice straw and other ancillary jobs will also result from the development and construction of the facility. The total project cost is $ 200,000. An amount equal to $ 100,000 or 50% of the total project cost, is requested from the Rice Fund. Matching funds will be provided by Arkenol through cash and in-kind contributions

APPENDIX A

Executive Summaries for the MBI International and Sierra Economic Development District Proposals.

EXECUTIVE SUMMARY

FIBEX-TREATED ANIMAL FEEDS AND ETHANOL FROM SACRAMENTO VALLEY RICE STRAW: PRODUCTION AND COMMERCIAL ASSESSMENT

MBI INTERNATIONAL - LANSING, MI

MBI International (MBI) is working toward a commercial production start up of a new value-added animal feed plant in Fall 2002. The feed is based upon Sacramento Valley rice straw and provides a highly digestible fiber for ruminants. The plant will be located in the Sacramento Valley. FIBEX-treated rice straw can provide 90-95% of the energy value of feed corn at reduced cost. MBI's technology is the Fiber Extrusion (FIBEX) technology invented by Dr. Bruce E. Dale, a member of MBI's project team. This technology treats rice straw (lignocellulose) with liquid ammonia at elevated temperature and pressure, followed by an instantaneous decompression to atmospheric pressure to produce a highly digestible feed material. The initial feeding trial conducted at the USDA National Dairy Forage Labs produced an average 1.3 kg/cow/day increase in milk production. At the same time, MBI has developed an integrated process that ha a cost of production of about $60/ton of feed. Today's projected cost compares very favorably to either alfalfa at about $145/ton or corn at about $85/ton in California. FIBEX feed is expected to be an important component of California's growing dairy industry in the Sacramento Valley.

MBI also plans to prepare pilot quantities of FIBEX-treated Sacramento Valley rice straw for testing for ethanol production for evaluation in its own facilities and others preparing to produce ethanol from California rice straw. The same pretreatment process is expected to provide a highly hydrolyzable substrate for fermentation to ethanol as an MTBE oxygenate replacement. It is important to note, however, that ethanol production from lignocellulosic materials, such as rice straw, is not expected to be economically viable for the next 7-10 years. This projection has been made by the U.S. Department of Energy National Renewable Energy Laboratory (NREL), Golden, CO, and other knowledgeable in the development of ethanol and other chemicals from lignocellulose. The key deterrents to economic viability remain (1) the need for cost effective hydrolysis enzymes, (2) pretreatment to enhance the hydrolysis of lignocellulose, (MBI plans to demonstrate the first commercial scale operation of a cost-effective pretreatment as part of the proposed program.), and (3) the ability to effectively mix a high solids slurry in a fermentation.

MBI has expended considerable time and money to bring this technology to its current point. An important part of our success is the investment already made by the State of California. Additional investment enhances California's past investment and helps assure future commercial success. The first commercial animal feed plant is expected to handle 500+ dry tons/day, and will operate 350 days per year (165,000+ tons/year). One 500-ton/day plant is expected to create approximately 45 new jobs (direct and indirect). Once the first plant comes on line, additional plants will be constructed and brought on line, as demand requires. The additional use of FIBEX-treated rice straw for ethanol production has potential to more than double the quantity of rice straw used. MBI requests $654,727 in funding from the State of California in this proposal to continue its commercialization efforts that will be matched by an additional $2,779,321 new and previous investment for a total project cost of $3,434,048 (does not include previous CARB investment of $820,000).

BIOMASS to ETHANOL FACILITATION ANALYSIS (BEFA)

A. EXECUTIVE SUMMARY

MTBE has been found to cause significant water pollution. Ethanol reformulated gasoline will reduce tail pipe emissions and improve air quality for the State of California. Used as a motor fuel alternative, biomass-to-ethanol improves national energy security and fuel diversity. Ethanol produced from crop residues (rice straw), wood thinning's, and solid waste landfills would provide the Sierra Economic Development Districts (SEDD) region with jobs in feedstock gathering, processing and Ethanol manufacturing. Biomass-to-Ethanol will reduce greenhouse gases. Biomass diversion from solid waste streams into ethanol production will extend landfill capacity and life. Past blue ribbon scientific studies have been conducted and espouse these and many other beneficial economical and environmental societal benefits. Yet ethanol production in California amounts to one half of one half of one percent of the annual fossil fuel consumption in California. Why? The purpose of this Grant request will focus on the regional feedstock and sighting issues (SEDD's four County representation region El Dorado Co., Placer Co., Nevada Co., and Sierra Co.) that challenge the implementation of a local Ethanol Manufacturing facility. The BEFA project is anticipated to be a one year project initiated in August, 2000 and completed by September, 2001. The BEFA project will be used as catalyst to attract cellulistic ethanol producers to the region.

The goals of this Grant request are as follows:

Combine current rice straw feedstock collection and utilization knowledge into past regional biomass feedstock surveys and analysis completed by SEDD. Current knowledge of raw material feedstock supplies and long term availability are critical prior to the initiation of a complete ethanol manufacturing plant feasibility analysis. Potential biomass feedstock source, with volume and cost relationships will be spatially projected using geographic information systems (GIS) for SEDD's administrative region.

Through outreach and education, build a broad base of public acceptance and support for the utilization of agricultural residues (rice straw), forest thinning and biomass fuels reduction, and solid waste stream extraction for the production of a cleaner and more ecologically friendly motor fuel, Ethanol.

Understand the challenges to the cellulistic ethanol manufacturing industry when faced with a variety of feedstock's such as forest resource biomass, agricultural biomass, and solid waste residue biomass.

Identify what is needed to attract the equity investors and debt financing to expand this new biomass-to-ethanol industry within SEDD's region.

Promote public/private linkages by which biomass-to-ethanol manufacturing can become a reality within SEDD's region.

Updating the Northern Sierra Biomass Study and incorporating agricultural residue and solid waste biomass resources is our objective. A model will be developed that will facilitate biomass-to-bioenergy industries within SEDD region. We shall attempt to think outside of the box as we develop this model while realizing that the future market for ethanol is primarily dependent on political policies and the private sectors market driven reaction to them.

The components of the biomass-to-bioenergy model are as follows:

Regional Biomass Production Capacities - understanding the quantification characteristics of the various resources and their potential release into the economic stream.

Extraction Cost - the removal of the various raw material feedstock's requires four types of cost/availability assessments: 1) Landowner - biomass owner motivation to provide long term biomass feedstock supply; 2) Remote feedstock storage and processing sites; 3) Availability of financial resources for wages and equipment; 4) Environmental permitting for the removal, processing, storage, and transportation of the various biomass feedstock's.

Transport Cost - are a function of distance between the biomass resource and the ethanol manufacturing site. Rail transportation of processed biomass from remote storage sites will also be integrated into this model.

Feedstock Processing - includes the varying degrees of grinding, chipping and milling followed by transformation of the finely divided material into a raw fiber mulch prior to the ethanol manufacture process. This component requires the most physical resources and is most amenable to new technological advances. As mentioned above, remote site processing will be analyzed.

Alternative End markets - broadening the market base in any appreciable way will contribute to the flexibility and security of the biomass-to-ethanol industry.

BEFA Project Cost:

The Biomass-to-Ethanol Facilitation Analysis project is estimated to cost a total of $95,575 of which 18% of the total ($17,450) is being requested for funding from Rice Straw Project Fund.

APPENDIX B

Grant funding criteria specified in February 2, 2000, report entitled "The Rice Straw Demonstration Project Fund – Program Description and Invitation for Grant Requests Fiscal Year 1999-2000."

THE RICE STRAW DEMONSTRATION PROJECT FUND

PROGRAM DESCRIPTION

AND

INVITATION FOR GRANT REQUESTS

FISCAL YEAR 1999-2000

Issued by the California Air Resources Board
February 2, 2000

FOREWORD

The Connelly-Areias-Chandler Rice Straw Burning Reduction Act of 1991 (the Phase Down Act) mandated the phase down of rice straw burning in California's Sacramento Valley. When the Act was written, it was anticipated that a new market for rice straw would be created that would provide an alternative to burning rice straw. However, eight years into the phase down, approximately 97 percent of the straw not burned continues to be incorporated into the soil, a practice that the rice growers object to because it is costly and may be conducive to increased incidence of crop diseases. In its 1997 status report, the Advisory Committee on Alternatives to Rice Straw Burning estimated that, at the current rate of development, only two percent of the straw produced in the year 2000 would find commercial uses.

In 1997, when the Phase Down Act limited rice straw burning to 38 percent of the acreage planted, rice growers turned to the California Legislature seeking relief from the phase down. The resulting legislation, Senate Bill 318, authored by Senator Mike Thompson, created the Rice Straw Demonstration Project Fund (the Rice Fund) and directed the California Air Resources Board to administer it. The Rice Fund provides cost-sharing grants for projects which utilize California rice straw according to criteria adopted by the Air Resources Board at its January 29, 1998, public meeting in Sacramento.

During the last two years, a total of about $3 million has been awarded from the Rice Fund for five demonstration and commercialization projects. This is the third and last Invitation for Grant Requests that is authorized for the Rice Fund Program. Approximately $1.2 million is available for grants for this fiscal year.

Information about the Rice Fund Program may be found on the Internet at the following address: **http://www.arb.ca.gov/rice/ricefund/ricefund.htm**

Applicants are encouraged to check the Rice Fund Web site for any changes to the schedule and for new information about the Rice Fund Program. Applicants are also encouraged to be on the Rice Fund e-mail list to receive notices by e-mail of any changes.

Questions about the Rice Fund may be directed to Ms. Lesha Hrynchuk by calling (916) 322-7297 or by e-mail to ***ricefund@arb.ca.gov***.

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FORMS

APPENDIX

SECTION 1 - PROGRAM DESCRIPTION

Senate Bill 318 (1997, Thompson) created the Rice Straw Demonstration Project Fund (the Rice Fund) and directed the California Air Resources Board to administer it. The Rice Fund will provide grants of up to 50 percent for projects which utilize California rice straw. As the law requires, the Air Resources Board developed the funding criteria in consultation with the Department of Food and Agriculture, the Trade and Commerce Agency, and the University of California. This document contains the funding criteria for the Rice Fund Program which was adopted by the Board at its January 29, 1998, meeting.[1]

INTRODUCTION

Approximately 500,000 acres of rice are grown in the Sacramento Valley, producing over a million tons of rice straw per year. Until the Connelly-Areias-Chandler Rice Straw Burning Reduction Act of 1991 (the Phase Down Act) was enacted, burning had been the primary means of disposing rice straw. The Phase Down Act required that rice growers in the Sacramento Valley phase out the burning of rice straw, and beginning in 2000[2], it allowed for only a limited amount of burning for disease management. Although there have been numerous ideas for using rice straw, none which consumes significant amounts has achieved commercial application. Of the rice straw not burned, only about three percent is now removed from the fields and used; the remaining 97 percent is plowed into the soil.

GOAL OF THE RICE FUND

The goal of the Rice Straw Demonstration Project Fund is to foster the emergence of commercially self-sustaining markets for rice straw. The Fund was established to provide financial assistance to projects which show the greatest potential for creating such markets. Because SB 318 intends much of the unburned rice straw to be used off-field by 2000, preference will be given to projects which 1) have the greatest potential for becoming operational within the next few years, and 2) have the greatest potential for consuming large amounts of rice straw.

Because many of the rice growing counties[3] are considered economically disadvantaged, SB 318 specifies that funding preference be given to projects which could be replicated throughout the rice growing regions of the Sacramento Valley. SB 318 also specifies that public and private support shall be demonstrated for successful projects, including local community support from the rice growing community where the projects would be located.

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[1] The criteria document adopted by the Board has been modified in nonsubstantive ways to be consistent with the third year of the program. In addition, at its December 10, 1999, public meeting, the Board expressed interest in rice straw to ethanol projects, therefore, the second paragraph was added to *Types of Eligible Projects* on page 2.

[2] Senate Bill 318 extended this date to 2001.

[3] Colusa, Sutter, Butte, Glenn, Yuba, Yolo, Placer, Sacramento Counties

TYPES OF ELIGIBLE PROJECTS

All eligible projects must use Sacramento Valley rice straw, must bring at least 50 percent matching funds, and must be technically feasible and sound. All required information must be provided in applications as specified in this Invitation for Grant Requests, and these applications must be signed by the applicant. Proposals not meeting these four basic requirements will be deemed non-responsive and will not be reviewed or considered further.

For this year's solicitation we are particularly interested in ethanol production projects. With the phase out of methyl tertiary butyl ether (MTBE) from California's gasoline, significant demand for ethanol is expected in California. Because a single ethanol plant could use 150,000 tons of rice straw, representing about 15 percent of the total available rice straw, the ARB would like to advance this significant use of rice straw.[4]

The focus will be on projects with high potential for commercialization in the near term rather than on projects in the research stage. Research may be only a small component of the overall project. The grant proposal must demonstrate the project's potential for being commercially self-sustaining after the Rice Fund grant has been expended. All proposed projects must clearly identify their expected sources of rice straw, and they must explain to what extent these sources are ensured.

One barrier to developing a marketplace for rice straw is the lack of an infrastructure to handle the straw from the harvest in the rice field to the businesses that would use the straw. To overcome this barrier, the Rice Fund will consider rice straw collection and marketing projects at early stages of development if they have the potential to enhance rice straw commercialization projects.[5] Straw collection and marketing includes getting the straw from the field to the end user (that is, collection, densification, removal from the rice field, transportation, and storage).

FUNDING

For the 1999-2000 fiscal year, approximately $1.2 million is available for grants from the Rice Fund. This is the third and last year for which Rice Fund grants are authorized.

Not more than 50 percent of the cost of any project will be funded, during a period not to exceed three years. There is neither a minimum nor a maximum amount of funding that will be approved for a project; it is anticipated that, in order to meet the goals of the Rice Fund, a small number of large grants will be made, rather than many small grants.

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[4] At its December 10, 1999, public meeting, the Board expressed interest in rice straw to ethanol projects.

[5] In fiscal year 97-98, Anderson Hay & Grain Co., Inc. was awarded a grant for developing rice straw infrastructure. Proposed projects which would augment or complement the Anderson project are encouraged to submit grant requests, rather than projects which propose to duplicate the Anderson effort.

Although this Invitation for Grant Requests (IGR) represents a bona fide intention to fund projects, the ARB reserves the right to reject any or all grant requests not judged to meet the goals of the Rice Fund.

REQUIRED MATCH

Funding sources for a proposed project are categorized into the following three types: (1) the Rice Fund Grant, (2) funding provided by the applicant, and (3) funding from other sources. Requirements of each type are discussed below. Examples are given on pages 12-13.

The Rice Fund Grant

The Rice Fund portion may not exceed 50 percent of the total project cost. This means that at least 50 percent matching funds are required for all projects funded under the Rice Fund program. Grant applications which seek more than 50 percent of the total project cost will not be reviewed or considered further.

The Applicant

The applicant (see page 11 for definition of applicant) must provide a minimum of 20 percent of the total project cost, or an amount equal to the funding requested from the Rice Fund, whichever is less. This requirement is to demonstrate significant, personal commitment to the project by the applicant--that the applicant is also taking significant risk in the project.

This 20 percent requirement may be *partially* fulfilled by prior investments directly related to the project and by in-kind contributions *during* the project. See page 25 for a description of the prior investment credit and in-kind services credit. If either or both of these credits are used, new cash investment by the applicant may be reduced to a minimum of 10 percent of the total project. Applicants will be required to demonstrate their ability to provide matching funds, and, if these credits are used, evidence of prior investment spending and in-kind contribution commitments must be demonstrated.

Other Funding Sources

After the Rice Fund and applicant contributions, the remainder of the project cost must be provided by other funding sources. Other funding sources include, but are not limited to, the following: grants, loans, or loan guarantees from other governmental agencies, other institutional financial entities, such as banks or credit unions, or private investors. Applicants will be required to provide evidence that these funds have been secured or committed by the funding sources.

Example

If the total proposed project costs $1 million, the requirements are:

(1) the *maximum* amount that could be provided by the Rice Fund would be $500,000 (50 percent of the total).

(2) the *minimum* the applicant would be required to provide would be the least of the following:

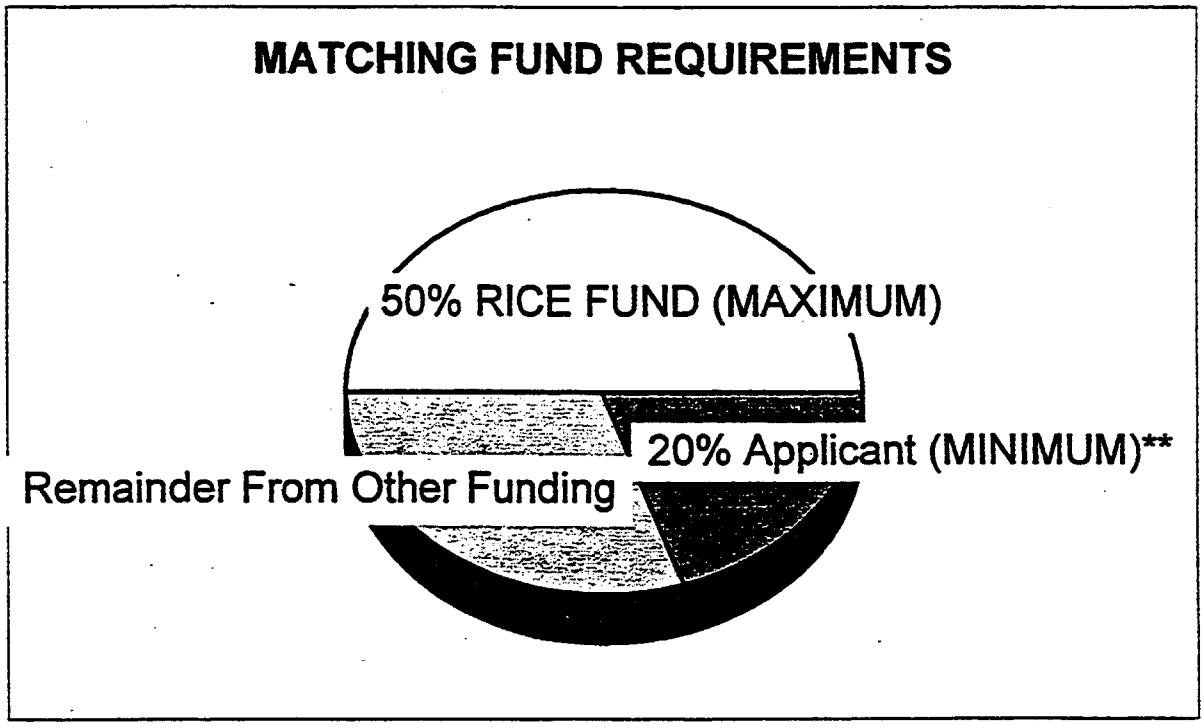
a) $200,000 (20 percent of the total), **or**

b) an amount equal to that requested from the Rice Fund, **or**

c) $100,000 (10 percent of the total) if the applicant demonstrates having made prior investments directly related to the project or proposed in-kind contributions that will be provided during the project (or any combination of the two) to make up the balance for the amount required under a or b above. In-kind contributions are included in the project's estimated costs; but prior investments may *not* be included in the project's estimated costs.

(3) other funding sources for the balance of the funds needed to cover the total project cost.

Figure 1



** Applicant's 20 percent minimum contribution may be *partially* met by in-kind and prior investment. A total of at least 50 percent matching funds for the current project is still required, regardless of the applicant/other funding mix.

APPLICATION PROCESS

Applicants shall submit to the ARB complete and detailed grant requests by the required deadline to be eligible to compete for the Rice Fund grants. All grant applicants are encouraged to attend a workshop to be held approximately midway through the application period. At this workshop, the ARB staff will explain the application requirements and answer questions. Top-scoring applicants will be asked to make brief presentations of their projects at a public meeting in the Sacramento area. The schedule for fiscal year 1999-2000 is shown on page 6.

Grant requests will be initially screened to determine that (1) the projects would contribute to commercial uses of Sacramento Valley rice straw, (2) the minimum matching fund requirements are met, (3) the basic technology and science are sound, and (4) the applications are complete.

Selection criteria for projects that pass the initial screening are presented in Section II. General information about the grant requests and the grants are included in Section III. Information to be included in the grant request is described in Section IV.

SELECTION PROCESS

Grant requests passing the initial screening will be evaluated for technical and business merit by expert advisors and reviewers using the criteria given in Section II. The reviewers may interview applicants if additional information or clarification is needed. The ARB staff, advisors, and reviewers may ask an applicant to re-scope the proposed project, schedule, and budget. The ARB staff and reviewers may visit the project sites of finalists prior to making final recommendations regarding the award of grants. Due to limited resources, all eligible projects will not necessarily be awarded grants, and some projects may be offered grants for smaller amounts than requested.

The expert advisors and reviewers will be selected from the public and private sectors. The identity of the advisors and reviewers will be kept confidential, although their affiliations will be public. Expert reviewers will be required to sign confidentiality agreements and conflict of interest disclosures. Grant requests will be ranked according to the scoring process explained in Section II, Selection Criteria. Grant requests with the highest rankings will be nominated to the Air Resources Board for funding. In order to promote a diversified rice straw marketplace, high-ranking, similar projects may not all be recommended for funding. The Board is expected to make the final funding determination at its May 2000, meeting.

Successful applicants will be required to sign legally binding grant provisions. Grant provisions, which will be tailored to each grant recipient, are discussed in Section III.

TECHNOLOGY FEASIBILITY

Technologies that, in the view of the ARB staff and the expert reviewers, have not been demonstrated as being feasible for commercial application will not be considered for funding under the Rice Fund program. In addition, projects that rely upon or require the development of

technologies beyond the scope of the proposed project are unlikely to receive high technical scores. All grant requests must present scientific and technical information demonstrating:

1) The project is based on sound scientific and engineering principles, and

2) The project's success does not depend on undeveloped technologies beyond the scope of the proposed project.

PROPRIETARY INFORMATION

Applicants may want to submit proprietary technical information to allow the grant advisors and reviewers to gain a complete technical understanding of the project. Applicants are also required to provide financial information to allow the grant advisors and reviewers to evaluate business plans, financial status, and credit worthiness. Applicants wishing to have such proprietary information protected as confidential must identify such information at the time the grant request is submitted. Protection will be provided in accordance with ARB regulations on disclosure of public records (Appendix, California Code of Regulations, Title 17, Section 91000 et seq.). These regulations require the applicant to specify the proprietary information at the time it is submitted to the ARB (see page 17, Requesting Confidentiality of Specific Information).

SCHEDULE

The following table shows the schedule for the award of grants allocated to the Rice Fund for the 1999-2000 fiscal year.

Rice Fund Project Schedule 1999-2000 Fiscal Year

Date	Milestone
February 2, 2000	Invitation for Grant Requests
February 16, 2000	IGR Workshop for Applicants
March 15, 2000	Grant Requests Due to the ARB
Early April 2000	Top-scoring Applicants Make Public Presentations
Early April 2000	Clarification Meetings with Applicants if Necessary
May 2000	Board Meeting to Award Grants

RATING NUMBERS

Each criterion above will be given a rating number from 0 to 4 using the following scale:

4 - Strongly exceeds criteria
3 - Moderately exceeds criteria
2 - Satisfactorily meets criteria
1 - Marginally meets criteria
0 - Does not meet criteria

SCORING GUIDELINES

Listed below are *examples* of the types of questions and areas of focus to be considered when evaluating grant applications and assigning rating numbers. The grant application review will not be limited to the questions and statements listed below.

Technical Plan Review

A. *Viable technology for utilization of rice straw*
Rate the viability of the technology for using rice straw and the discussion of potential technological problems along with plans for overcoming them. Rate the applicant's knowledge of potential technical barriers and how to overcome them.

B. *Reasonable and complete project*
What is the strength of the provided evidence of technological viability, e.g., supporting test data, drawings, and schematics? Is there adequate information included to assess the likelihood of technological success of the project? Rate the project plan, the description of milestones, tasks and subtasks, and estimated completion dates in project schedule.

C. *Stage of development*
How reasonable is the applicant's claim of the project's stage of development? For example, if the grant request states that two years from the start of the project it will achieve self-sustaining commercialization stage, evaluate the evidence presented to substantiate that claim. Estimate the time needed for commercialization.

D. *Technical competency of project team*
Rate the credentials, competency level, track record, and references of the applicant's technical team.

SECTION II - SELECTION CRITERIA

Grant requests will be evaluated using the criteria given below. Based on the evaluation of a project, for each criterion a rating number from 0 to 4 will be given, and the rating number will be multiplied by the weighting factor (shown for each criterion in parentheses below). These products for all criteria will be summed to calculate the project's score. For example, a 4 (maximum) rating for criterion A (20 point weighting) would result in a score of 80 (4 times 20). Reviewers will recommend rating numbers for criteria in areas where they are expert. The ARB staff will consolidate these recommendations, assign the rating numbers, and complete the score for each application.

Minimum qualifying scores will be required for the technical and business criteria as follows: technical review requires a minimum of 120 out of 200 possible points; business review requires a minimum of 120 out of 200 possible points.

SCORING

Technical Plan Review - 200 total possible score

A. Viable technology for utilization of rice straw (20)
B. Reasonable and complete project (10)
C. Stage of technology development (10)
D. Technical competency of project team (10)

Business Plan Review - 200 total possible score

E. Business merit and commercialization plan (20)
F. Straw supply plan (10)
G. Financial support and credit integrity (10)
H. Business competency of project team (10)

Program Goals Satisfaction - 200 total possible score

I. Potential quantity of rice straw to be used annually (20)
J. Length of time to self-sustaining operation (10)
K. Project location and replication potential (10)
L. Local community support (10)

Policy Assessment - 140 total possible score

M. Policy Assessment (25)
N. Environmental Effects (10)

Business Plan Review

E. *Business merit and commercialization plan*
Rate the applicant's understanding of the marketability, market size, target market, market growth potential, and expected market share of the planned product. Assess the product's market potential. Rate the applicant's understanding of the competition. Rate how the grant request addresses market barriers. Rate the project's potential to end in a profitable business. Is the budget sufficiently detailed to clearly illustrate how the funds would be utilized? Are budget costs reasonable and realistic to accomplish the goals of the project? Is the schedule for reaching commercialization realistic? If not, estimate the expected time to commercialization. Are the contingency scaled-down and scaled-up project budgets reasonable? If the submitted grant request does not end in commercialization, how reasonable are the plans for achieving commercialization?

F. *Straw supply plan*
How sound is the plan for obtaining rice straw for the project? How secure is the supply of rice straw once the project reaches commercialization? Rate the discussion of potential barriers to a stable straw supply and the discussion about the quality of rice straw needed. How much straw supply is reasonably ensured, for how long?

G. *Financial support and credit integrity*
Rate the applicant's financial investment in the project in cash, in-kind contributions, and prior investment. Is a reasonable amount being requested from the Rice Fund? Is a reasonable amount being supplied by other investors? Rate the credit integrity of the applicant. Rate the applicant's financial records. Rate the evidence of intent to invest by the other funding sources (e.g., letters of intent from other debt or equity participants). Rate the balance sheet equity of the applicant.

H. *Business competency of project team*
Rate the credentials, competency level, track record, and references of the applicant's business team.

Program Goals Satisfaction

I. *Potential quantity of rice straw to be used annually*
Rate the applicant's annual rice straw usage estimates at the end of the project and five years later. (More points for higher usage of rice straw.) How much grant money is being requested compared to the potential straw usage (i.e., grant dollars per tons of straw used annually)? Is the project likely to shift some or all of its reliance on rice straw to other raw materials? Compare to other projects.

J. *Length of time to self-sustaining operation*
Rate the project's time to reach self-sustaining operation. (More points for shorter length of time.)

K. *Project location and replication potential*
Is the project located in one of the rice growing counties of the Sacramento Valley? Could the project's capacity to use more rice straw be expanded by building more facilities in the rice growing regions? Compare to other projects.

L. *Local community support*
Rate the level of local community support, using evidence provided in the grant request and any letters of support sent to the ARB. Rate the number of jobs created locally.

Policy Assessment

M. Policy Assessment

Rate the overall potential of this project achieving successful, self-sustaining commercialization. Rate the project's potential contribution to creating a successful, self-sustaining marketplace for rice straw products. How well would this project fit in the mix of projects already underway or other projects being considered for Rice Fund grants? How does the project fit in with the existing rice farming systems under use in the Sacramento Valley? How well would the project fit in with the local goals, objectives and policies of the communities where the project is proposed to be located?

N. Environmental Effects

Rate the overall environmental effects of this project. Compare project's estimated emissions to those of established facilities in the same industry. Compare to other projects being considered. How does the project fit into the ARB's statewide air resources management strategy?

SECTION III

GENERAL INFORMATION ABOUT GRANT REQUESTS AND GRANTS

GRANT REQUEST QUALIFICATIONS

Grant requests must meet all requirements specified in this Invitation for Grant Requests. Grant requests will be screened for the following requirements; grant requests not meeting these requirements will be administratively disqualified.

- Rice Straw -- the project must contribute to commercialized uses of Sacramento Valley rice straw.

- Matching funds -- both the 50 percent total matching fund requirement and the 20 percent applicant requirement as specified in *required match* on page 2 of this IGR must be met. Clearly identify both matching fund amounts on Form 1.

- Technically feasible and sound -- the technical feasibility must have already been proven; the technology must be based on sound scientific and engineering principles.

- Completeness -- all forms must be completed and signed as specified in this Invitation for Grant Requests.

DEFINITION OF PROJECT

As used in the Rice Fund Program, a project is defined as a business enterprise intended to establish a commercially self-sustaining operation that uses rice straw produced in the Sacramento Valley. As used in the Rice Fund Program, the project starts when the Rice Fund grant is signed and continues until the date specified in the grant provisions, when Rice Fund grant disbursements are terminated.

DEFINITION OF APPLICANT

As used in the Rice Fund Program, applicant is defined as the legal entity that owns and controls the project for which a Rice Fund Grant is being requested. The applicant is the business. The applicant may be an individual, a partnership, a corporation, a cooperative, or any other legal entity. Other financial investors in the project are considered "other funding sources." Anyone who owns 20 percent or more of the applicant business is considered to be an applicant principal. All applicant principals must provide financial disclosure. The applicant must designate a lead contact person who shall be the main contact for the Rice Fund. This lead contact must have the legal authority to submit project progress reports and sign legal documents on behalf of all applicant principals.

EXAMPLES OF REQUIRED MATCHING FUNDS

Following are examples of how the matching fund requirements may be fulfilled. These examples are based on a total proposed project cost of $1 million. The requirements are the following:

(1) the *maximum* amount that could be requested from the Rice Fund would be $500,000 (50 percent of the total).

(2) the *minimum* amount the applicant would be required to provide would be the lesser of:

a) $200,000 (20 percent of the total project cost), see Example 1, **or**
b) an amount equal to that requested from the Rice Fund, see Example 2, **or**
c) $100,000 (10 percent of the total project cost) **and**
evidence to support prior investments[6] directly related to the project and in-kind contributions[7] that will be provided *during* the project to make up the balance for the minimum amount required under a or b above, see Example 3.

(3) other funding sources must contribute the balance of the funds needed to cover the total project cost.

Example 1: Total project cost of $1 million

(1) Rice Fund is asked to provide $500,000 (the maximum allowed) and

(2) the applicant provides $200,000, and

(3) other funding sources contribute $300,000 (the balance).

Example 2: Total project cost of $1 million

(1) Rice Fund is asked to provide $150,000 (less than the maximum allowed) and

(2) the applicant provides $150,000 (less than 20 percent but equal to the amount requested of the Rice Fund), and

(3) other funding sources contribute $700,000 (the balance).

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[6] Prior investments are *not* included in the project estimated costs.

[7] In-kind contributions *shall* be included in the project estimated costs.

Example 3: Total project cost of $1 million

(1) Rice Fund is asked to provide $300,000 and

(2) the applicant provides $100,000 cash (10 percent) and evidence that prior investments directly related to the project amounted to $50,000 and in-kind contributions that will be provided during the project total to $50,000. This $200,000 meets the 20 percent applicant minimum matching fund requirement. The $100,000 cash and $50,000 in-kind contribution will be the applicant's *new* investment of $150,000 to the project. The money spent on prior investments is used to meet the applicant minimum matching fund requirement only, and it is not considered part of the proposed project cost.

(3) other funding sources contribute $550,000 (the balance).

Example 4: Total project cost of $1 million

(1) Rice Fund is asked to provide $100,000 (10 percent of the project cost) and

(2) the minimum the applicant must provide is $100,000 cash, which is equal to the amount being asked of the Rice Fund. Since this amount is 10 percent, no credits from prior investments and in-kind contributions may apply.

(3) other funding sources contribute $800,000 (the balance).

PROJECT COSTS

All project costs should be itemized and summarized by categories appropriate to the project. Examples of budget categories are provided in Form 3. All project costs shall show the Rice Fund portion. The budget shall show enough detail so that application reviewers can assess the applicant's understanding of the steps and costs involved in bringing the project to successful commercialization. If a budget item is judged to be unreasonable, it will be disallowed, and the application may receive a lower score. Applicants may be asked for additional information on budget items at the clarification meetings and may be required to revise the proposed project's budget.

Only those expenses reasonably incurred during the duration of the grant shall be included in the total project costs. Costs of real, tangible property such as permanent structures and equipment should be annualized, and those annualized costs shall be reimbursable for the duration of the grant. Projected depreciation and amortization shall be computed using the straight-line method in amounts that allocate the cost of an asset over its remaining useful life. For example, a $3,600 piece of equipment for a manufacturing plant is needed which has a 10-year useful life; the annualized cost is $360. If the applicant applies for a two-year Rice Fund grant, and the piece of equipment is needed at the beginning of the project, $720 may be listed for the total project cost for this item. If the grant recipient submits a grant disbursement request three months after the start of the grant, $90 will be allowed as the cost-reimbursable payment. ($360 per year divided

by 12 months equals $30 per month; this amount times three months equals $90). If the piece of equipment is leased, the three-month lease cost shall be used. If a loan is used to obtain the equipment, the three-month loan repayment cost shall be used. Similarly for other real, tangible property such as land and permanent structures, only the annualized or amortized costs such as rent, mortgage, and lease costs during the project's Rice Fund grant duration will be allowed. If an amortization or depreciation schedule that is shorter than is allowed by the Internal Revenue Service is used, reimbursement will be excluded as a project cost.

Applicants shall provide budget and cash flow projections for the three years after the Rice Fund grant ends. This post-Rice Fund project budget and cash flow requirement is to ensure that the project will be self-sustaining after the Rice Fund grant has been expended.

GRANT

Upon accepting a Rice Fund grant, the successful applicant shall enter into a legally binding grant. Some of the grant provisions are discussed below. Additional provisions may be added, if deemed necessary by the ARB, at the time of grant award.

GRANT DISBURSEMENTS

Grant payments will be disbursed by the ARB upon satisfactory review of progress reports and grant disbursement requests submitted by grant recipients. Cost-reimbursement payments will be made for specified amounts for the completion of milestones stipulated in the grant and documented in progress reports. Payment will not be made if the progress report submitted is deemed by the ARB to be unsatisfactory. Under no circumstances will the ARB reimburse a grant recipient for costs exceeding the grant award. There is a one-year limit to start drawing the Rice Fund grant money; and a three-year limit to end drawing from the Rice Fund. This calendar starts with the day the grant is approved. **Matching funds must be spent at the same rate as or faster than the rice fund grant.**

If the ARB grant manager determines that the grant recipient has violated the terms of the grant, or if acceptable progress on the project is not being made as outlined in the project schedule, the grant disbursements will be suspended until the Board determines whether to terminate the grant.

PROGRESS REPORTS

Every grant disbursement request shall be accompanied by a progress report. The progress report must document expenditures since the previously submitted progress report and must describe the achievement of a milestone specified in the grant. If the interval between grant disbursement periods is more than three months, the grant recipient shall submit progress reports at three month intervals. The minimum interval shall be one month. The progress reports shall include:

- a two-to-five page executive summary of the project's progress, suitable for public release;

- a summary of project tasks or subtasks completed or partially completed since the last progress report, including a discussion of any problems or opportunities that have emerged as a result of the ongoing work, and a brief discussion of work planned before the next progress report;

- a summary of expenditures for the achievement of the task or subtask, and a record of expenditures by category, subcategory, and detail item of the project budget;

- a cumulative summary of expenditures by budget category since the beginning of the project as well as the total amount of dollars spent on the project to date;

- a status report on the commercialization plan.

The grant recipient shall submit three copies of the progress report and grant disbursement request. The budget section of the progress report shall itemize all expenses incurred during the task(s) and subtask(s) identifying both Rice Fund expenses and matching-fund expenses by budget category and subcategory. The ARB staff will be responsible for approving payments. No reimbursement will be made for expenses that, in the judgment of the ARB staff, are not reasonable or do not comply with the grant.

GRANT MONITORING

Meetings

A meeting will be held between key project personnel and ARB staff, either at the ARB offices in Sacramento or at the project site, before work on the project begins. The purpose of the first meeting will be to discuss the overall plan, details of performing the tasks, the project schedule, and any issues that may need to be resolved before work can begin. Also, a review meeting will be held in Sacramento midway through the project. More frequent progress meetings may be scheduled if requested by the grant recipient or ARB grant manager. Another meeting will be held in Sacramento at the conclusion of the project to review the project results. Additional meetings may also be held at the project location or in Sacramento after appropriate notification.

Technical Monitoring

Any significant change in the project scope requires the prior approval of the ARB grant manager. At the completion of each task, the grant manager may make a site visit to evaluate the attainment of the task.

Final Reporting Requirements

Within 90 days after project completion, the grant recipient shall submit five copies of the final project report, plus an electronic file if available. Ten percent of the total project cost will be withheld until the receipt and satisfactory review of the final project report and final grant disbursement request. Final reporting requirements include:

- o a two-to-five page, publication-ready summary of the project, suitable for public release;

- o a detailed report discussing major aspects of the project including a discussion on the technology;

- o if applicable, an updated commercialization plan, including minimum levels of production and sales needed to achieve successful continuation of commercialization without State support;

- o a financial statement prepared in accordance with generally accepted accounting principles, including all necessary explanatory notes. The statement shall clearly identify and distinguish between Rice Fund project finances and other finances.

PROPRIETARY INFORMATION

"Proprietary information" is information the grant recipient has identified and justified in a satisfactory manner as being under the grant recipient's control prior to commencement of performance of a Rice Fund grant or produced by the grant recipient or its subcontractors at their own expense, and which the grant recipient has reasonably demonstrated as being of a proprietary nature either by reason of copyright, patent or trade secret doctrines in full force and effect at the time when performance of a Rice Fund grant is begun.

1. The ARB **will not consider** the following submitted information to be proprietary:

   a. budget information (e.g., overhead or hourly rates of individuals);
   b. names of subcontractors and matching fund participants; and
   c. information pertaining to established patents.

2. The ARB **will accept** requests for confidentiality for information that is essential to understanding the grant request and fits the following description:

   a. ***Technical information,*** or information as used here, means recorded information regardless of form or characteristic, of a scientific or technical nature. The information may be graphic or pictorial delineations in media such as drawings or photographs, test specifications or related performance or design type documents or computer software. Computer software may include computer programs, data bases and documentation. Further examples of technical information include research and engineering data, engineering drawings and associated lists, specifications, engineering calculations, standards, process sheets, manuals, technical reports, catalog item identification, and related information. However, Government Code Section 6254.7 states that all information, analyses, plans or specifications that disclose the nature, extent, quantity, or degree of air contaminants or other pollution which any article, machine, equipment, or other contrivance will produce, which any state or local agency requires applicant to provide before the applicant builds, erects,

alters, replaces, operates, sells, rents, or uses such article, etc., are public records. All air monitoring and emission data are public records.

Technical information as used herein does not include financial reports, cost analyses and other information incidental to grant administration.

b. A ***trade secret*** is any formula, plan, pattern, process, tool, mechanism, compound, procedure, production data, or compilation of information which is not patented and which is known only to certain individuals with a commercial concern who are using it to fabricate, produce, or compound an article of trade or a service having commercial value and which gives its user an opportunity to obtain a business advantage over competitors who do not know or use it.

c. Information developed for the Commercialization Plan may be deemed proprietary for marketing purposes.

d. Applicant financial documentation and records;

e. Any information that is **patent pending** may be deemed confidential until a patent has been approved.

Requesting Confidentiality of Specific Information

Any grant request in response to this IGR which contains data claimed to be a *trade secret* or otherwise exempt from disclosure under Government Code Section 6254 or 6254.7 or under other applicable provisions of law shall be clearly identified and delineated as such at the time of submission. **All confidential information shall be submitted in an envelope separate from the rest of the grant request.** The envelope and each page containing confidential information are to be clearly marked "confidential". Also to be provided is the name, address and telephone number of the individual to be contacted if the ARB receives a request for disclosure of or seeks to disclose the data claimed to be confidential. Submit all requests for confidentiality per California Code of Regulations, Title 17, Section 91000 et seq., Disclosure of Public Records (see Appendix). Emission data shall not be identified as confidential.

How ARB Will Handle Proprietary Information Requests

The ARB will make every attempt to protect the confidentiality of information that has been submitted in accordance with ARB regulations on confidentiality. However, applicants are advised that the State cannot provide an absolute guarantee that materials designated as confidential will not be disclosed to the public. Further, the State cannot accept legal liability if such disclosure occurs. The ARB will not disclose data identified as confidential, except in accordance with the ARB requirements (see Appendix).

Complete and return Form 6 with the grant request if submitting proprietary or confidential information.

WHEN AND WHERE TO SUBMIT GRANT REQUESTS

The deadline for submittal of grant requests will be **4:00 p.m. March 13, 2000,** received at the address below. The submittal package shall include the following:

- o 15 bound copies and one unbound copy of the grant request, including budget and all attachments, with original signatures,
- o 15 copies of the project business plan, if the applicant chooses to submit a separate business plan, and
- o an electronic file on computer diskette of the grant request if it is available.

All materials submitted will become the property of the State. All confidential information shall be submitted in an envelope separate from the rest of the grant request. The envelope and each page containing confidential information are to be clearly marked "confidential." The above grant request package(s) should be delivered to the Air Resources Board with the applicant name on the outside of the package(s) and addressed as follows:

Rice Fund Grant Request
Robert Fletcher
Chief, Planning and Technical Support Division
California Air Resources Board
2020 L Street
Sacramento, CA 95814

QUESTIONS ABOUT THE RICE FUND

Information about the Rice Fund Program may be found on the Internet at the following address:

http://www.arb.ca.gov/rice/ricefund/ricefund.htm

Questions about the rice fund may be directed to Ms. Lesha Hrynchuk, by calling (916) 322-7297 or by e-mail to *ricefund@arb.ca.gov.*

SECTION IV - GRANT REQUEST CONTENTS

We expect the total amount of funding requested by Rice Fund applicants to significantly exceed the funds available to the program. As a result, the evaluation and selection process of the program is expected to be very competitive. Grant requests that are successful will show significant potential to become permanent, operating facilities, utilize significant amounts of rice straw annually, and reflect high degrees of technical, fiscal, and administrative excellence. This section contains information for assembling grant requests, and describes the information required. Additional informational material may be available at the informational workshop.

Table 1 (page 27) shows a checklist of the contents of the grant request package. Six of the items (Forms 1-6) should be provided on the forms included in the "Forms" section of this document. Grant requests shall be typed on 8 ½ x 11 inch paper and assembled in the order shown by the checklist.

TITLE PAGE

The grant request title page shall contain the project title, applicant's name (business or organization), lead contact person, address, and telephone number.

EXECUTIVE SUMMARY

A one-page executive summary of the project shall be provided which is suitable for public release. The executive summary shall include the following information:

Project title
Applicant name
Project description
Time length of project and date of commercialization
Usage of rice straw in tons per year at commercialization
Project location and number of jobs created at commercialization
Total project cost and amount requested from the Rice Fund
Any appropriate additional information desired

TABLE OF CONTENTS

Each page of the grant request shall be numbered and a table of contents shall be provided with associated page numbers.

APPLICATION/AUTHORIZATION (Form 1)

Each item on the application/authorization form shall be completed, and the form signed, and dated. The project abstract shall be limited to 400 words which: state the project objectives, briefly describe the project, describe previous work done relating to the proposed project, and

estimate annual rice straw usage and number of jobs to be created at the end of the Rice Fund grant and five years later.

DESCRIPTION OF PROJECT

The narrative shall be concise and thorough. Define all acronyms. Include sufficient detail so reviewers familiar and unfamiliar with the technology and business can evaluate its technical merit and commercialization potential. It is important that the grant request demonstrates the project team's knowledge and expertise in the technology area. Where possible, the results of engineering analyses and engineering drawings should be used to support technical claims made in the grant request. Claims regarding improvements in efficiency or cost-effectiveness that are unsupported or are based upon erroneous assumptions may result in the grant request being disqualified or receiving a low score.

IN THE GRANT REQUEST, ADDRESS ALL THE FOLLOWING INFORMATION IN THE ORDER LISTED:

1) Provide a description of the proposed project and the history of what was involved in bringing it to this development stage; include discussion of the research and development to date.

2) Include drawings, sketches, flow charts, and schematics of the technology as appropriate to describe how it works. Include computations including clearly stated assumptions.

3) Discuss previous work by the applicant on the proposed project, funding for that work, and sources of that funding.

4) Identify technical barriers to the proposed project. Discuss how these barriers will be addressed by the proposed project.

5) List and describe any relevant patents or patents pending on the proposed project.

6) Describe the project plan, and clearly and completely describe each task. Distinguish between work that will take place during the Rice Fund project and work that preceded and will follow the Rice Fund project. Identify the major contributors to each task and what each will do. Clearly identify what portion of the work will be supported with Rice Fund money.

7) Describe grant recipient resources available for the project (e.g., buildings, shops, and tools).

8) Discuss the environmental effects (on air, water, waste, etc.) of the project.

COMMERCIALIZATION PLAN

The narrative shall be concise and thorough. Define all acronyms. Include sufficient detail so the reviewers can evaluate the business merit and commercialization potential of the proposed project. The grant request must demonstrate that successful commercialization is likely. It is also important that the grant request clearly identify and quantify the proposed project's economic benefits and show that the proposed project has high potential for a viable business operation. If a business plan is available, it should be attached.

Understanding the Market

1) Describe the need for the product(s) (California, United States and internationally). Identify and describe the target markets (both domestic and foreign) for the product(s). Discuss the relevant characteristics (e.g., market timing, market segments, trends, purchasing criteria).

2) Discuss market size in terms of units and total dollar sales expected in first year after the product is put on the market, and identify that year. Estimate the market growth based on the expected sales in the first year. Discuss the factors that will influence the growth rate. Estimate market share for the proposed project.

Competition

1) Discuss competition for the proposed product(s) and discuss how the product(s) from this project can be expected to compete in the marketplace after the end of Rice Fund support.

Business Plan

1) Estimate the time at which a commercially self-sustaining business will begin operation. Describe how this estimate was made.

2) Identify at what point the process will be operational (minimum production level). Estimate the minimum, annual sales required to break even, and the minimum sales needed to make an acceptable profit (sustainable production).

3) Describe the strategy for commercialization, including how it will be financed and the personnel and organizations to be involved.

4) Discuss the marketing plan for the project (e.g., organization to market the product, method for marketing).

5) Describe the facility where the product will be manufactured, including where it is located, its capacity, and modifications that may be needed.

6) Identify the critical path leading from the current status of development to full commercial operation. Identify milestones to be achieved and estimated dates of each milestone's completion. The final milestone will be the minimum level of production that must be reached for self-sustaining operation.

7) List the permits necessary for the project, and describe the steps that must be taken to obtain them.

8) Discuss the rice straw supply plan. How will the rice straw be obtained for the project during the Rice Funding time, once the project reaches commercialization, and for a projected five years? Discuss the quality of rice straw needed. Discuss potential barriers. Describe how adequate supplies of suitable straw will be ensured. Discuss any contingency plans if the necessary rice straw feed stock is temporarily unavailable (e.g., can alternative feed stock be used?).

9) Identify other barriers to successful operation (e.g., resource constraints, institutional or regulatory barriers). Discuss how these barriers will be addressed.

10) Identify and describe milestones for partial grant disbursements, and estimate the dates each will be reached.

11) Estimate the number and types of jobs to be created upon successful completion of project and five years later.

12) Demonstrate local community support for the project. Attach letters of support from representatives of the local community such as from county boards of supervisors, chambers of commerce, local organizations, and individuals.

Financial

1) Estimate the total budget for a self-sustaining, profitable operation. Indicate how much additional funding the applicant will need to reach this point. Identify other funding commitments and prospective commitments for access to funds for the project through this level of operation.

2) Provide financial statements (income statement, balance sheet, cash flow) for the project (1) for the past three years, (2) during the time under the Rice Fund grant, and (3) for three years after the grant. List and discuss assumptions that may have a significant impact on your forecasts (e.g., interest, inflation rates, market size, competition, availability of financing, market growth rate, pricing, and timing of government legislation).

Contingency Plans

In addition to the primary funding request, three contingency plans, listed below, shall be included. Discussion of financial projections and proforma of all three contingencies shall be limited to one or two pages in total.

1) plan for a scaled-down project if the requested grant were reduced,

2) plan for a scaled-up project if a larger grant award were made, and

3) plan if grant request were denied.

PERSONNEL DESCRIPTION

Describe the qualifications of the key staff and their respective contributions to the project. Include managerial, technical, and business/marketing experience relating to the proposed project. Clearly identify the person who will have overall, lead responsibilities for the project and will be the main contact with the ARB.

Project Team

Describe the ownership and legal structure of the applicant organization. Explain the structure of the project team, and include a graphical display or organization chart. The relationships among all the project team members should be explained in the context of the project structure. Identify the team member who will have overall responsibility for management of the project, and any team members who will be acting primarily as matching fund participants. Discuss in detail how the work will be allocated among the staff and any contractors. Identify who is in charge of each task, who will work on each task, and what work each will do. Discuss the relationship and interaction between the technical and the business teams.

Project Team Technical Qualifications

This section of the grant request should explain the qualifications of the project team to conduct the proposed work. In particular, describe the team members' experience and expertise with the proposed project. Where applicable, cite references to past and current work directly related to the technology area being addressed in the project. Provide resumes of all key individuals responsible for conducting work on the proposed project (including any subcontractors). It is important to establish that the project team is qualified to conduct the proposed work. Therefore, provide specific examples and references to the experience and expertise of the team in the technology area.

Project Team Managerial and Business Capabilities

Clearly describe the necessary managerial and business strengths to ensure the successful completion of the proposed project and for successful commercialization. Discuss how these strengths will be used to successfully complete the project and commercialize the product(s). Provide resumes of all key managerial and business personnel. Describe the past experiences of the firm and project principals in developing and commercializing new technologies.

APPLICANT FINANCIAL INFORMATION

List the contact information for all applicant principals (those who have 20 percent or more financial interest in the applicant business/organization) and the titles they hold in the applicant business/organization.

Complete Form 2, Applicant Financial Information, to the detail requested.

For each applicant principal:

- Clearly describe their financial status;
- Clearly describe their capability of providing the necessary matching funds over the life of the project and to financially support the project through self-sustaining operation;
- Identify where each principal's capital comes from (e.g., sale of products, or capital markets);
- Describe any other company operations they are involved with and the types of products or services produced;
- Discuss commitment to the project in terms of matching funds and prior investments directly related to the project;
- Provide copy of filed Articles of Incorporation or filed Partnership Agreement;
- Provide copy of Fictitious Name Statement filed;
- Provide the previous three year-end business financial statements, including income statements, balance sheets, and cash flow statements. Individuals shall provide personal financial statements including tax returns; and
- Provide written authorization for the ARB staff to access credit history.

Financial statements shall be prepared in accordance with generally accepted accounting principles, including all necessary explanatory notes. The financial statements shall be audited

or compiled by the applicant's independent public accountant. The ARB's preference is for audited financial statements, as an audit or review lends greater credibility to the financial statements provided by an applicant. In lieu of audited financial statements, the applicant may provide financial statements compiled by an independent public accountant.

BUDGET (Form 3)

Complete each item on each page of Budget (Form 3). Show the budget and funding source for each task; distinguish among Rice Fund money, the applicant's contributions (include both cash and in-kind contributions), and other funding sources. Identify total contributions by each funding source. Identify total funding requested from the Rice Fund and total matching funds including monetary and reasonable value of in-kind contributions. Also identify other sources of funding being sought.

APPLICANT PRIOR INVESTMENT (Form 4)

If the applicant takes credit for prior investment to meet the applicant matching fund requirement, Form 4 must be completed. Prior investment credit will be given only for those expenditures during the last five years directly tied to bringing the current project to commercialization. Credit will be given only for **real, tangible assets.** The dollar amount of credit claimed shall be the applicant's equity in the asset, i.e., the depreciated value, or book value, minus any money owed on the asset. Prior investment credit will *not* be given for any pre-paid expenses or services (see in-kind contributions credit below). Credit will not be given for prior expenditures for research and development. *Credit for the same asset may not be claimed under both prior investment and in-kind contributions.* Convincing evidence must be provided for the prior expenditure to be accepted. Examples of allowable prior investment credit are: permanent structures and their remodeling, and office and factory equipment. Prior investments may *not* be included in the current project costs; they are only used for partial credit in meeting the applicant matching fund requirement.

IN-KIND CONTRIBUTIONS (Form 5)

If the applicant takes credit for in-kind contributions to meet the applicant matching fund requirement, Form 5 must be completed. In-kind contributions may be committed services, prepaid expenses, or real, tangible assets. Credit for in-kind contributions will be given only for those commitments for services or use of assets starting with the beginning of the current project once the Rice Fund grant is signed. In-kind contributions must be directly tied to bringing the current project to commercialization. Credit will be given only for the annualized market value of the in-kind contribution. For real, tangible assets this is the depreciated value amortized over the time that the grant is in force.

For example, the grant will be in force for the proposed project for two years. A previously purchased forklift is being claimed under in-kind contribution. The annual depreciation rate over the remaining useful life of the forklift is calculated and multiplied by the two years of the grant. This is the amount that may be claimed for in-kind contribution.

Credit for the same asset may not be claimed under both prior investment and in-kind contributions. Convincing evidence must be provided for the in-kind contribution credit to be accepted. Examples of allowable in-kind contribution credit are: use of permanent structures, existing office and factory equipment, commitment from persons to perform services for the project without reimbursement. The value of in-kind contributions *should* be included in determining the current Rice Fund project costs.

Clearly identify on Form 5 the dollar amounts that represent in-kind contributions and describe how each in-kind contribution dollar amount was determined.

PROJECT SCHEDULE

Provide a graphic display (e.g., time line) of a measurable benchmark for each project task and the corresponding completion dates. The graphic display should identify the tasks, subtasks if necessary, and due dates. Clearly show milestones that are to be used as a basis for grant disbursements. In addition, provide a graphic display of the schedule to commercialize the product(s), starting from the end of the grant through the minimum level of production required at the end of commercialization.

ATTACHMENTS

Letters of commitment from each funding source are required. Letters of commitment from each person providing in-kind contributions are required. Letters of support from potential customers (i.e., appropriate individuals or companies) to show market support for the proposed product(s) are encouraged. Any letters demonstrating community support should be attached. If the applicant has an existing business plan, it may also be included in the attachments.